Remarks

Favorable reconsideration and allowance of the claims of the present application are respectfully requested. Applicants acknowledge, with thanks, the Examiner's indication in the Office Action dated September 22, 2004 that Claim 3 is allowable over the art of record, if rewritten in independent form including all the limitations of the base claim. In response to the Examiner's comments, applicants have added new independent Claim 12, which includes the subject matter of original Claims 1 and 3. Although allowance of Claim 3 is indicated, applicants, at the present time, would like to obtain a patent including all the claims pending in the present application.

Before addressing the specific grounds of rejection, raised in the present Office Action, applicants' have amended Claims 1, 3, 6, 8, 10 and 11, and added Claim 12. Applicants' have amended Claim 1 to recite that applicants' present invention relates to a female terminal having a main connecting body with at least one tab, wherein the tabs are positioned to divert energy resulting from detrimental arcing during interconnectivity of a male terminal into the female terminal away from the main electrical interface of the female terminal. Applicants have also amended Claim 1 to include the subject matter of dependent Claim 9.

Specifically, amended Claim 1 positively recites a female terminal for use with a male terminal in establishing an electrical power connection, said female terminal comprising a main connector body having an open inserting end for receiving an inserting portion of the male terminal and an interior location for establishing a main electrical interface between said male terminal and said female terminal, the interior location comprising elongated, twisted, curved and angled beams extending along opposing interior faces of said main connector body and along said main electrical interface; the main connector body having at least one tab proximate to said open inserting end of the main connector body and distal from said interior location of the main connector body, said at least one tab being contacted by the male inserting portion and prior to or

subsequent of achieving said main electrical interface, wherein upon an occurrence of an electrical arcing event between the male and female terminals an energy flow resulting from said arcing event traveling from said male terminal through said at least one tab at a location remote from said main electrical interface for both said male and female terminals. Support for this amendment to Claim 1 is found throughout applicant's disclosure. See for example paragraph (0039), paragraph (0040), paragraph (0045), paragraph (0047), paragraph (0051), paragraph (0057), FIG. 5a, FIG. 5b, FIG. 7, FIG. 8, FIG. 13, FIG. 18, FIG. 21, and FIG. 24.

More specifically, referring to paragraph (0039) of applicants' disclosure, FIG. 7 of applicants' disclosure clearly illustrates a pair of forwardly positioned sacrificial contact tabs 64, 66 associated with the insertion end 54 of the main contact body. The contact tabs 64, 66 provide an initial contact point between the female terminal and the associated male terminal during their engagement. It is the intended feature of the contact tabs 64, 66 to provide a remote location, away from the electrical interface established between the insertion portion of the male terminal and the interior location of the female main connector body, at which the male terminal is in direct electrical contact with the female terminal for accommodating and receiving an electrical arching event. In this matter, the integrity of the electrical interface established between the female terminal and the male terminal can most likely be protected in the instance of an electrical arching event, in favor of sacrificing the initial contact tabs 64, 66. FIG. 7 clearly depicts where the contact tabs 64, 66 are an integral part of the main contact body. FIGS. 5a and 5b clearly depict an interior location comprising elongated, *twisted, curved and angled beams 60, 62* extending along opposing interior faces of the main connector body and along the main electrical interface. Applicants have amended dependant Claims 3, 6, 9, 10 and 11 so that the terms of these claims have anteceded basis in amended Claim 1.

Applicants have also amended Claim 8 to recite that the female terminal is formed from *an angled* configurable blank. Support for the amendment to Claim 8 is found in FIG. 6 of applicants' specification.

Applicants have also cancelled Claim 9, since the subject matter of Claim 9 has been incorporated into amended Claim 1.

In the present Office Action, Claims 1, 2, 4, 6, 7, 8 and 11 stand rejected, under 35 U.S.C. §102(e), as allegedly anticipated by U.S. Patent No. 6,616,468 to Sakiyama ("Sakiyama"). Claims 1, 2, 4 and 8 also stand rejected, under 35 U.S.C. §102(b), as allegedly anticipated by U.S. Patent No. 6,390,839 to Miwa ("Miwa"). Claim 5 stands rejected, under 35 U.S.C. 103(a), as allegedly unpatentable over Miwa. Claim 9 stands rejected, under 35 U.S.C. 103(a), as allegedly unpatentable over Sakiyama in view of U.S. Patent. 3,815,081 to Jones ("Jones"). Claim 10 stands rejected, under 35 U.S.C. §103, as allegedly unpatentable over Sakiyama, Jones, and further in view of U.S. Patent 5,951,339 to Chailoot et al ("Chailoot et al"). Claim 1 stands objected to for minor informalities. Applicants respectfully disagree and submit the following.

Referring first to the objection to Claim 1, is the Examiner's position that the term "terminal" should be inserted after the term "female" in Claim 1. In response the Examiner's comments and for the purposes of advancing prosecution, applicants have amended Claim 1 to include the term "terminal". In light of the amendment to Claim 1, applicants submit that the objection to Claim 1 has been obviated and respectfully request that the objection be withdrawn.

Referring now to the rejections under 35 U.S.C. §102, it is axiomatic that anticipation under section 102 requires that the prior art reference disclose *each and every element* of the claim to which it is applied. *In re King*, 801 F.2d, 1324,1326, 231 USPQ 136,138 (Fed. Cir. 1996). Thus, there must be no differences between the subject matter of the claim and the disclosure of the prior art reference. Stated another way, the reference must contain within its four corners adequate direction to practice the invention as claimed. The corollary of the rule is equally applicable: Absence from of the applied reference of any claimed element negates anticipation. *Kloster speed steel AB. v. Crucible Ink.*, 793 F.2d1565,1571, 230 U.S. P.Q. 81, 84 (Fed. Cir. 1986).

Applicants respectfully submit that Claims 1, 2, 4, 6, 7,8 and 11 are not anticipated under 35 U.S.C. §102(e) by Sakiyama, since Sakiyama fails to teach or suggest each and every limitation of applicants' claimed invention. More specifically, Sakiyama fails to disclose a female terminal for use with a male terminal in establishing electrical power connection, wherein *the female terminal comprises a main connector body having at least one tab proximate to an open inserting end of the main connector body and distal from an interior location of the main connector body*, the at least one tab being contacted by the male inserting portion prior to achieving an electrical interface between the male terminal and the female terminal, where upon the occurrence of an electrical arch event between the male and female terminals an energy flow resulting from the arching event travels from the male terminal through at least one tab of the main connector body of the female terminal at a location remote from the main electrical interface for both the male and female terminals., as recited in amended Claim 1.

Applicants have determined that destructive arching that occurs between male and female terminal connectors in high voltage applications may be substantially reduced by incorporating sacrificial tabs to the connector body of the terminal. The sacrificial tabs are located separated from the main electrical interaction between the male and female terminal. Therefore, although arching may damage the sacrificial tabs, the integrity of the electrical interaction between the female and male terminal is maintained.

Referring to page 3 of the present Office Action, it is the Examiner's position that the dummy female terminal 82 depicted in FIG. 8B of the Sakiyama reference meets the limitation of applicants' at least one tab positioned approximate to the open inserting end of the main connector body of the female terminal.

Sakiyama discloses a male and female connector having a pair of permanent magnets attached to both sides of the inner surface of the male type. Referring to FIG. 8B of the Sakiyama reference, Sakiyama discloses a female terminal having multiple female main contacts depicted by reference number 221. The contacts depicted by reference number 821 are female dummy contacts, which are not in electrical

communication with the inserting portion 12 of the male terminal. Sakiyama discloses that by positioning a magnetic field between the male terminal and the female terminal that the arch may be diverted away from the female main contacts 221 to the female dummy terminal 821. Electrical contact between the male terminal and the female terminal is made through the inserting portion 121 of the male terminal 12 and the female main contact 221. The inserting portion 121 male terminal 12 does not contact the female dummy terminal 821. Sakiyama disclose a number of embodiments utilizing female dummy terminals 821, wherein the dummy terminals are either positioned below, above or adjacent to the female main contact 221.

Sakiyama relies on the dummy terminals 821 to provide a site for arching in order to protect the female main contact 221 that is positioned adjacent to, above or below the dummy terminal 821. Applicants note that contrary to applicants' claimed structure, none of the female main contacts 221 of the female terminal include sacrificial contact tabs. Therefore, Sakiyama fails to disclose a female terminal having *a main connector body having at least one tab approximate to the open inserting end of the main connector body and distal from the interior location of the main connector body* with at least one tab being contacted by the male inserting portion prior to or subsequently to achieving a main electrical interface between the female terminal and the male terminal when upon the occurrence of a electrical arching event between the male and female terminals an energy flow resulting from the arching event travels from the male terminal through the at least one tab at a location remote from the main electrical interface between the male the female terminals, as recited in amended Claim 1. Sakiyama does not anticipate applicants' claimed structure, since fails to disclose each and every element of amended Claim 1.

Turning now to the rejection of Claims 1, 2, 4 and 8 under 35 U.S.C. §102(b) as allegedly anticipated by Miwa, applicants respectfully submit that Miwa also fails to anticipate applicants' claimed invention, since Miwa also fails to teach or suggest each and every element of applicants' claimed structure. Miwa fails to teach or suggest a

female terminal having a main connector body with at least one tab approximate to an open inserting end of the main connector body and distal from an interior location of the main connector body, the *at least one tab being contacted by a male inserting portion prior to or subsequent to achieving a main electrical interface between a male terminal and a female terminal,* as recited in amended Claim 1.

Miwa disclose a pair of terminals that include contact parts to be contacted with each other to provide electrical communication and discharge parts that are contacted to each other for discharge, in which the discharging parts are contacted with each other before contacting the contact parts. Referring to FIG. 2 of the Miwa reference, Miwa disclose a male terminal having a male insertion portion 19 and a male discharge portion 20, wherein the male discharge portion is separate from the male insertion portion 19. Referring now to FIG. 3 of the Miwa reference, Miwa disclose a female terminal having a main connector body 22 having a spring 23 extending outward from the open portion of the main connector body and a contact portion 25 extending into the main connector body. Referring now to FIG. 5, Miwa discloses that when the male terminal 10 is interconnected with the female terminal 12, the insertion portion of the male terminal 19a contacts the contact portion of the female terminal 25 and the discharge portion 20 of the male terminal 10 contacts the spring 23 of the female terminal 12. The insertion portion 19a of the male terminal 10 does not contact the spring 23 of the female portion 12.

Referring now to column 4, lines 35-45, Miwa discloses that when the protrusion (insertion portion of the male terminal) 19 and the spring 23 contact an arch discharge does not generate, since the arch discharge occurs between the spring 23 and the male discharge portion 20 so that the protrusion 19 and the spring 23 are prevented from deterioration and damage. Therefore, since the spring 23 is not an electrical conduction part, the spring does not contact the male insertion portion of the male terminal. Therefore, since the male insertion portion does not contact the spring 23, the spring 23 fails to meet the limitation of *at least one tab being contacted by the male insertion*

portion prior to or subsequent of achieving main electrical interface between the female terminal and the male terminal, as recited in amended Claim 1.

Therefore, since Miwa does not disclose at least one tab being contacted by the male insertion portion prior to or subsequent to achieving main electrical interface between the female terminal and the male terminal where in upon an occurrence of an electrical arching event between the male and female terminals energy flow resulting from the arching event travels from the male terminal through the at least one tab at a location remote from the main electrical interface for both the male and female terminals, Miwa does not teach or suggest each and every limitation of applicants claim, as recited in amended Claim 1.

The foregoing remarks clearly indicate that the applied references doe not teach each and every aspect of the claimed invention as required by *King and Kloster speed steel AB.*; therefore the claims of the present application are not anticipated by the disclosures of Miwa and Sakiyama. Applicants respectfully submit that the instant §102 rejections have been obviated and withdrawn there of is respectfully requested.
In so far as the 35 U.S.C. 103 rejections of Claims 5, 9 and 10 are concerned, Applicants submit that the combined disclosures of Miwa, Sakiyama, Jones, and Chailoot et al. fail to render Applicants' invention unpatentable, since the applied prior art fails to teach or suggest Applicants' claimed structure, as recited in amended Claim 1. If an independent claim is non obvious under U.S.C. 103(a), then any claim depending there from is non obvious. *In re Fine*, 837 F.2d 1071,5 U.S.P.Q. 2d 1596 (Fed. cir. 1988) Specifically, the applied prior art fails to teach or suggest a female terminal having a main connector body having an open inserting end for receiving an inserting portion of the male terminal and an interior location for establishing a main electrical interface between the male terminal and the female terminal, *said interior location comprising elongated, twisted, and angled beams extending along opposing interior faces of said main connector body and along said main electrical interface;* the main connector body including *at least one tab approximate to an open inserting end of the main connector body and distal from an*

interior location of the main connector body, be at least one tab being contacted by a male inserting portion prior to or subsequent to achieving main electrical interface between a male terminal and a female terminal, wherein upon an occurrence of an electrical arching event between the male and female terminals, an energy flow resulting from the arching event travels from the male terminal through at least one tab at a location remote from the main electrical interface between the male and the female terminals, as recited in amended Claim 1.

To establish a prima facie case of obviousness of a claimed invention all the claimed limitations must be taught or suggested by the prior art. *In re Wilson,* 424 F.2d 1382,1385,165 U.S.P.Q. 44, 496 (C.C.P.A. 1970). Applicants submit that the above remarks concerning the failures of Sakiyama and Miwa to anticipate applicants' invention, apply equally here for the present obviousness objections, under 35 U.S.C.§103. Applicants thus incorporate those remarks herein by reference.

To reiterate, Sakiyama discloses a female terminal having multiple main body contacts, in which the main body contacts comprise contacts that make electrical contact to a male terminal and contacts that serve as dummy contacts. Sakiyama disclose that the dummy contacts serve as the site to receive destructive arching. Therefore, since Sakiyama disclose that dummy body contacts are utilized to divert arching away from main body contacts, Sakiyama does not teach or suggest a female terminal having main body contacts with at least one tab, wherein the tabs divert arching away from the main electrical interface between the female and the male terminals.

Miwa also fails to render applicants' claimed structure unpatentable, since Miwa fails to teach or suggest a structure having *at least one tab being contacted by a male insertion portion prior to or subsequent of achieving main electrical interface between the female terminal and the male terminal*, as recited in amended Claim 1. Miwa disclose a female terminal and male terminal both having separate electrical discharge and electrical communication portions. Miwa disclose that discharging between the insertion portion of the male terminal and the contact portion of the female terminal may be

controlled by contacting the spring that extends away from the insertion portion of the male terminal to the spring that extends away from the opening portion of the female terminal. Therefore, Miwa does not disclose a female terminal having at least one tab where the male terminal contacts the at least one tab prior to electrical interaction between the male and the female terminals, in which the at least one tabs diverts arching away from the main electrical interface between the male and female terminals.

Jones fails to fulfill the deficiencies of Sakiyama, since Jones also fails to teach or suggest a structure comprising a female terminal having *a main connector body having at least one tab approximate to the open inserting end of the main connector body and distal from the interior location of the main connector body* with at least one tab being contacted by the male inserting portion prior to or subsequently to achieving a main electrical interface between the female terminal and the male terminal, wherein upon the occurrence of a electrical arching event between the male and female terminals an energy flow resulting from the arching event travels from the male terminal through the at least one tab at a location remote from the main electrical interface between the male the female terminals, as recited in amended Claim 1.

Jones disclose a female electrical contact member having a non-circular socket including a plurality of twisted beams having internal tracking surfaces adapted to exert a torsional force on the associated male contact. Applicants note that Jones is directed towards increasing torsional forces on male surfaces to increase electrical contact and retention forces in the connection and do not mention the destructive effects of electrical arching. Applicants submit Jones is far removed from applicants' claimed structure, since Jones fail to discuss electrical arcing or disclose a female connection *having at least one tab approximate to the open inserting end of the main connector body and distal from the interior location of the main connector body*, as recited in amended Claim 1.

Chailoot et al. also fail to fulfill the deficiencies of the above references, since Chailoot, et al. fail to teach or suggest applicants' claimed structure. Applicants' observe that the Examiner has relied upon Chailoot, et al. to provide the limitation of a "pair of

contact ribs". Applicants' note that Chailoot, et al. is directed towards female connectors in which the design aids to reduce the force required to insert the male connector. Applicants submit that Chailoot, et al. do not discuss the disadvantageous effects of arching and is far removed from applicants' invention.

Chailoot, et al. fail to teach or suggest a female connector body having an interior location for establishing a main electrical interface *comprising elongated, twisted, and angled beams extending along opposing interior faces of said main connector body* and a main connector body having at least one tab proximate to the open inserting end of the main connector body and distal from the electrical interface, wherein at least one tab substantially reduces the incidence of disadvantageous arcing at the electrical interface, as recited in amended Claim 1.

The 103 rejections also fail because there is no motivation in Sakiyama, Miwa, Jones, and Chailoot et al. that suggests combining or modifying the disclosed structures to provide applicant's claimed structure. The law requires that the prior art reference provide some teaching, suggestion or motivation to make the modification. Here, there is no motivation provided in the disclosure of the applied prior art to modify the prior art structures in a manner that would meet all the limitations of applicants' claimed structure. "The mere fact that the prior art may be modified in the manner suggested by the Examiner does not make the modification obvious unless the prior art suggested the desirability of the modification." *In re Fitch*, 972 F.2d 1260, 1266 23 U.S.P.Q. F.2d 1780, 1783-84 (Fed. Cir. 1992).

In summary, applicants respectfully submit that this application is in condition for allowance. Accordingly, applicants respectfully request that this application be allowed and a Notice of Allowance be issued.

Respectfully submitted,

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